REMARKS

This Amendment responds to the Office Action dated December 13, 2006 in which the Examiner rejected claims 5, 8, 14 and 17 under 35 U.S.C. §101, rejected claims 20-25 under 35 U.S.C. §112, second paragraph, rejected claims 11, 12, 14, 15, 17 and 18 under 35 U.S.C. §102(b), and rejected claims 1-3, 5-6, 8-9 and 20-25 under 35 U.S.C. §103.

As indicated above, claims 5, 8, 14 and 17 have been amended to be directed to statutory subject matter. In particular, the claims are directed to a patentable process and method and are not directed to an abstract idea. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 5, 8, 14 and 17 under 35 U.S.C. §101.

As indicated above, claims 20-25 have been amended in order to more particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 20-25 under 35 U.S.C. §112, second paragraph.

As indicated above, claims 11, 14 and 17 have been amended to make explicit what is implicit in the claims. The amendment is unrelated to a statutory requirement for patentability.

Claim 1 claims an image processor, claim 5 claims a method of image processing and claim 8 claims a computer a program. The image processor, method and program include first and second decision controllers, and a color decision controller. The first decision controller decides whether input color gradation value of a target pixel exists in first ranges. The second decision controller decides whether differences between color gradation value of the target pixel and those of pixels

adjacent thereto exist in second ranges different from the first ranges. The color decision controller decides that the target pixel has a specified color when the first decision controller decides that the color gradation value of the target pixel exist in the first ranges and the second decision controller decides that the differences exist in the second ranges.

Through the structure, method and program of the claimed invention calculating a difference between pixel gradation values themselves, as claimed in claims 1, 5 and 8, the claimed invention provides an image processor, method and program which can detect a specific color and pattern with high precision. The prior art does not show, teach or suggest the invention as claimed in claims 1, 5 and 8.

Claim 11 claims an image processor, claim 14 claims a method of image processing and claim 17 claims a computer program. The image processor, method and program include first and second decision controllers, and a color decision controller. The first decision controller decides whether input color gradation value of the target pixel exist in first ranges. The second decision controller performs a linear calculation on the input color gradation value of the target pixel between each color component value of the target pixel and decides whether results of the calculation exist in second ranges different from the first ranges. The color decision controller decides that the target pixel has a specific color when the first decision controller decides that the color gradation value of the target pixel exist in the first ranges and the second decision controller decides that the results exist in the second ranges.

Through the structure, method and program of the claimed invention deciding whether input color gradation value of a target pixel exists in first ranges and performing a linear calculation on the input color gradation value of the target pixel

between each color component value of the target pixel as claimed in claims 11, 14 and 17, the claimed invention provides an image processor, method and program which can detect a specific color and pattern with high precision. The prior art does not show, teach or suggest the invention as claimed in claims 11, 14 and 17.

Claims 11, 12, 14, 15, 17 and 18 were rejected under 35 U.S.C. §102(b) as being anticipated by *Inoue* (JP 11-075073).

Inoue appears to disclose improving a processing efficiency of a black/white image by accurately discriminating a color image from the black/white image, and accurately discriminating the black/white image including a medium tone component and the black/white image not including it and using only the image not including the medium tone component as the black/white image. The processing unit is provided with a read section 10 that obtains plural color signal data (RGB) from each pixel of an image and a color.black/white image discrimination section 25 of the read section 10 discriminates the image to be a black/white image not including a medium tone image when a gradation level difference of each of color signal data (RGB) is ≤ a prescribed value and a mean value of gradation levels of each of the color signal data (RGB) is ≤ a 1st threshold level or ≥ a 2nd threshold level that is higher than the 1st threshold level in the all pixels of the image. (Abstract).

[0024]

[Equation 1]

$$\left| R - \frac{R+G+B}{3} \right| < k \quad \text{and}$$

$$\left| G - \frac{R+G+B}{3} \right| < k \quad \text{and}$$

$$\left| B - \frac{R+G+B}{3} \right| < k$$

[0025]

[Equation 2]

$$\frac{R + G + B}{3} < \alpha \quad \text{or}$$

$$\beta < \frac{R + G + B}{3}$$

[0026] With the formula 1, when the absolute value of the difference of the gradation level value and average value of each chrominance-signal data is below a predetermined value (k), it has judged that there is almost no gradation level difference of each chrominance-signal data. Therefore, it is an ideal that a predetermined value (k) is a positive-number value near "0." On the other hand, with the formula 2, it has judged whether the average of the gradation level value of each chrominance-signal data is smaller than the 1st threshold (alpha) used as the decision criterion of a black pixel, or the average of the gradation level value of each chrominance-signal data is larger than the 2nd threshold (beta) used as the decision criterion of a white pixel.

Thus, *Inoue* merely discloses equation 2 which determines whether the average of a gradation level value is smaller than a black pixel or whether the average of the gradation level value is larger than a white pixel [0026]. Nothing in *Inoue* shows, teaches or suggests determining whether the gradation values themselves are within a first range as claimed in claims 11, 14 and 17. Rather, *Inoue* clearly discloses that the average of the gradation levels are used.

Additionally, *Inoue* merely discloses equation 1 which determines an absolute value of a difference of a gradation level value and an average value of each chrominance-signal data is below a predetermined value. Thus, nothing in *Inoue*

shows, teaches or suggests a linear calculation between each color component value of the target pixel as claimed in claims 11, 14 and 17. Rather, *Inoue* clearly discloses a difference between the gradation level value and an <u>average</u> value.

Since nothing in *Inoue* shows, teaches or suggests a) determining whether an input color gradation value exists in first ranges and b) performing a linear calculation between each value of the target pixel as claimed in claims 11, 14 and 17, Applicants respectfully request the Examiner withdraws the rejections to claims 11, 14 and 17 under 35 U.S.C. §102(b).

Claims 12, 15 and 18 recite additional features. Applicants respectfully submit that claims 12, 15 and 18 would not have been anticipated by *Inoue* within the meaning of 35 U.S.C. §102(b) at least for the reasons as set forth above. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 12, 15 and 18 under 35 U.S.C. §102(b).

Claims 1, 5 and 8 were rejected under 35 U.S.C. §103 as being unpatentable over *Kikuchi et al.* (U.S. Patent 6,219,382) in view of *Inoue*.

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

Kikuchi et al. appears to discloses a system for detecting a change in scenes (a scene change) represented by a moving picture signal. (Column 1, lines 9-11). In the moving picture search apparatus of the fifth basic embodiment, the second means comprises means for detecting a color of each of pixels composing a block, means for comparing the detected color with a reference color range, means for

calculating a difference between the detected color of each of pixels and the detected color of a neighboring pixel, means for comparing the calculated difference with a reference difference, and means for, when the detected color is in the reference color range and the calculated difference is in the reference difference, deciding that the related pixel forms a portion of a caption. (Column 12, lines 47-58). The program in FIG. 6 is started in response to a start signal inputted via the input unit 160. As shown in FIG. 6, a first step 201 of the program starts operation of the video signal reproducing device 151. (Column 17, lines 14-19). The step 202 decides whether or not the reproduction of the video signal is finished by referring to the output signal of the video signal reproducing device 151 or by referring to an operating condition signal fed from the video signal reproducing device 151. (Column 17, lines 24-28). The step 203 samples the 1-frame-corresponding segment IN of the input video signal (the output signal of the video signal reproducing device 151). (Column 17, lines 41-43). A step 204 following the step 203 divides the 1-frame-corresponding signal segment IN into portions corresponding to equal-size blocks composing one frame. The step 204 processes 1-pixel-corresponding sections of the portions of the signal segment IN, and thereby calculates color histograms H(c, N, k) for the respective blocks in a known way. (Column 17, lines 51-56). A step 205 subsequent to the step 204 compares the two preceding histograms H(c, N-1, k) and H(c, N-2, k), and thereby calculates similarities BVF(N, k) according to the following equation. (Column 17, lines 64-67). The similarities BVF(N, k) are forward with respect to the frame N-1. In addition, the step 205 compares the present histogram H(c, N, k) and the immediately preceding histogram H(c, N-1, k). (Column 18, lines 7-10). The similarities BVL(N, k) are

backward with respect to the frame N-1. Furthermore, the step 205 compares the present histogram H(c, N, k) and the second immediately preceding histogram H(c, N-2, k). (Column 18, lines 18-21). The similarities BVC(N, k) are before and behind (forward and backward) with respect to the frame N-1. (Column 18, lines 29-30). A step 206 following the step 205 calculates the sum of the forward similarities BVF(N, k) and the backward similarities BVL(N, k). Then, the step 206 divides the calculated sum by sixteen to calculate a mean value (an average value) among the forward similarities BVF(N, k) and the backward similarities BVL(N, k). (Column 18, lines 37-42). In the fifth embodiment of this invention, the step 207 compares the before-and-behind similarities BVC(N, k) with a threshold value .theta.JUD 1. The threshold value .theta.JUD1 is equal to or different from the threshold value .theta.JUD. For every block position corresponding to a before-and-behind similarity BVC equal to or greater than the threshold value .theta.JUD1, the step 207 sets the related correlation value to the before-and-behind similarity BVC. For every block position corresponding to a before-and-behind similarity BVC smaller than the threshold value .theta.JUD1, the step 207 sets the related correlation value to the corresponding forward similarity BVF. In the step 208, a block position corresponding to a before-and-behind similarity BVC is judged to be an effective-block position. (Column 20, lines 30-45).

Thus, *Kikuchi et al.* merely discloses at column 20, lines 30-45, calculating a difference between histogram frequencies (or calculation of difference number of pixels) between a target frame and a preceding frame of a moving picture. Applicants respectfully traverse the Examiner's interpretation of *Kikuchi et al.* based only upon column 12, lines 47-58. Column 12, lines 47-58, of *Kikuchi et al.*

correspond to the fifth embodiment discussed at column 20, lines 30-35. Thus, *Kikuchi et al.* is directed to calculating a difference between histogram frequencies and is <u>not</u> directed to calculating a difference between pixel gradation values themselves (i.e., deciding whether differences between color gradation values of the target pixels and adjacent pixels exist in second ranges different from the first ranges) as claimed in claims 1, 5 and 8. Rather, *Kikuchi et al.* is merely directed to calculating a difference of histogram frequencies or the number of pixels between a target frame and a preceding frame (i.e., a preceding frame is <u>not</u> an adjacent pixel).

As discussed above, *Inoue* merely discloses a formula in which the <u>average</u> of a gradation level value of each chrominance-signal data is smaller than a black pixel or larger than a white pixel. Nothing in *Inoue* shows, teaches or suggests determining whether the input color gradation value itself exists in first ranges as claimed in claims 1, 5 and 8. Rather, *Inoue* clearly teaches away from the claimed invention since an <u>average</u> of the gradation values is compared to first and second thresholds.

Furthermore, as discussed above, *Inoue* merely discloses an absolute value of a difference of the gradation level value and <u>average</u> value of each chrominance-signal data is below a predetermined value. Thus, nothing in *Inoue* shows, teaches or suggests differences between gradation values of the target pixels and <u>adjacent pixels</u> as claimed in claims 1, 5 and 8. Rather, *Inoue* only discloses a difference between the gradation level value and an average value.

Since neither *Kikuchi et al.* or *Inoue* show, teach or suggest a) determining whether input color gradation values of a target pixel exists in first ranges and b) deciding whether differences between color gradation values of the target pixels and

those of pixels adjacent thereto exist in second ranges different from the first ranges as claimed in claims 1, 5 and 8, Applicants respectfully request the withdraws the rejection to claims 1, 5 and 8 under 35 U.S.C. §103.

Claims 2, 3, 6 and 9 were rejected under 35 U.S.C. §103 as being unpatentable over *Kikuchi et al.* in view of *Inoue* and further in view of *Mutoh et al.* (U.S. Patent 6,631,210). Claims 20-22 were rejected under 35 U.S.C. §103 as being unpatentable over *Kikuchi et al.* in view of *Mutoh et al.* and further in view of *Sonoda et al.* (U.S. Patent 6,115,494). Claims 23-25 were rejected under 35 U.S.C. §103 as being unpatentable over *Inoue* in view of *Sonoda et al.*

Applicants respectfully traverse the Examiner's rejection of claims 2, 3, 6, 9 and 20-25 under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since nothing in *Kikuchi et al.* or *Inoue* show, teach or suggest the primary features as claimed in claims 1, 5, 8, 11, 14 and 17, Applicants respectfully submit that the combination of these references with the secondary references to *Mutoh et al.* or *Sonoda et al.* will not overcome the deficiencies of the primary references. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 2-3, 6, 9 and 20-25 under 35 U.S.C. §103.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested. Should the Examiner find that the application is not now in condition for

allowance, Applicants respectfully request the Examiner enters this Amendment for purposes of appeal.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to Deposit Account No. 02-4800.
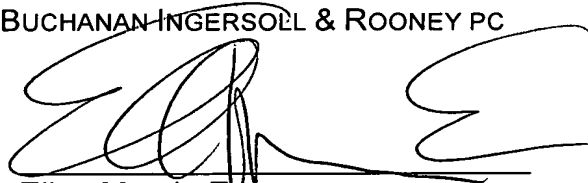
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Respectfully submitted,

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